

What is Claimed is:

1. A cathode ray tube having an envelope including a panel and a neck connected by a funnel, the funnel comprising:
 - a main body portion having a seal edge and a neck, the main body portion
 - 5 having at least one region with a higher tensile stress than other regions of the main body portion;
 - a first protective coating on an exterior surface of the main body portion, the first protective coating covering at least a portion of the at least one region, the first protective coating being of a composition and thickness to substantially reduce
 - 10 susceptibility of the at least one region to mechanical damage; and
 - a second protective coating on the exterior surface of the main body portion that covers at least a portion of the first protective coating, the second protective coating being of a composition and thickness to protect the funnel from moisture contact.
 - 15
2. The cathode ray tube of claim 1, wherein the first protective coating is a silicate layer.
3. The cathode ray tube of claim 2, wherein the silicate layer contains aluminum oxide, silicon carbide, titanium carbide, or boron carbide.
- 20
4. The cathode ray tube of claim 1, wherein the funnel has a deflection angle of about 125-135 degrees.
5. The cathode ray tube of claim 1, wherein the at least one region has a tensile stress of
- 25 at least 1350 pounds per square inch.

6. The cathode ray tube of claim 1, wherein the second protective coating substantially covers the main body portion and extends from proximate the neck to the seal edge.
- 5 7. The cathode ray tube of claim 1, wherein the second protective coating is a silicone layer containing graphite or a poly-tetrafluoroethylene layer containing graphite.
8. A cathode ray tube having an envelope including a panel and a neck connected by a funnel, the funnel comprising:
- 10 a main body portion having a seal edge and a neck, the main body portion having a deflection angle of at least 125 degrees and at least one region with a tensile stress of at least 1350 pounds per square inch;
- a first protective coating on an exterior surface of the main body portion, the first protective coating covering at least a portion of the at least one region, the first
- 15 protective coating being of a composition and thickness to substantially reduce susceptibility of the at least one region to mechanical damage; and
- a second protective coating on the exterior surface of the main body portion that covers at least a portion of the first protective coating, the second protective coating being of a composition and thickness to protect the funnel from moisture
- 20 contact.
9. The cathode ray tube of claim 8, wherein the first protective coating is a silicate layer containing aluminum oxide, silicon carbide, titanium carbide, or boron carbide.

10. A method for making a cathode ray tube having an envelope including a panel and a neck connected by a funnel, comprising the steps of:

providing the funnel with a main body portion having at least one region with a higher tensile stress than other regions of the main body portion;

- 5 coating an external surface of the main body portion with a first protective coating such that the first protective coating covers at least a portion of the at least one region, the first protective coating being of a composition and thickness to substantially reduce susceptibility of the at least one region to mechanical damage;

attaching a seal edge of the main body portion to the panel;

- 10 mounting an electron gun in the neck;

evacuating and sealing the envelope; and

coating at least a portion of the first protective coating with a second protective coating, the second protective coating being of a composition and thickness to protect the funnel from moisture contact.

15

11. The method of claim 10, wherein the first protective coating is a silicate layer containing inorganic fillers.

20

12. The method of claim 10, further comprising forming the funnel to have a deflection angle of about 125-135 degrees.

13. The method of claim 10, wherein the at least one region has a tensile stress of at least 1350 pounds per square inch.

14. The method of claim 10, wherein the second protective coating is a poly-tetrafluoroethylene layer or silicone layer containing graphite.
15. A cathode ray tube having an envelope including a panel and a neck connected by a
5 funnel, the funnel comprising:
a main body portion having a seal edge and a neck, the main body portion having at least one region with a higher tensile stress than other regions of the main body portion;
a first protective coating on an exterior surface of the main body portion, the
10 first protective coating covering at least a portion of the at least one region; and
a second protective coating on the exterior surface of the main body portion that covers at least a portion of the first protective coating.
16. The cathode ray tube of claim 15, wherein the first protective coating is of a
15 composition and thickness to substantially reduce susceptibility of the at least one region to mechanical damage.
17. The cathode ray tube of claim 15, wherein the second protective coating is of a
composition and thickness to protect the funnel from moisture contact.
- 20 18. The cathode ray tube of claim 15, wherein the first protective coating is a silicate layer with an inorganic filler.

19. The cathode ray tube of claim 18, wherein the silicate layer is selected from the group consisting of a potassium silicate layer, a lithium silicate layer, and a sodium silicate layer.
- 5 20. The cathode ray tube of claim 18, wherein the inorganic filler is selected from the group consisting of an aluminum oxide, a silicon carbide, a boron carbide, and a titanium carbide.
- 10 21. The cathode ray tube of claim 15, wherein the funnel has a deflection angle of at least 125 degrees
22. A cathode ray tube having an envelope including a panel and a neck connected by a funnel, the funnel comprising:
- 15 a main body portion having a seal edge and a neck, the main body portion having at least one region with a higher tensile stress than other regions of the main body portion;
- a protective coating on an exterior surface of the main body portion, the protective coating covering at least a portion of the at least one region, the protective coating being of a composition and thickness to substantially reduce susceptibility of
- 20 the at least one region to mechanical damage.
23. The cathode ray tube of claim 22, wherein the protective coating is a silicate layer.

24. The cathode ray tube of claim 23, wherein the silicate layer is selected from the group consisting of a potassium silicate layer, a lithium silicate layer, and a sodium silicate layer.
- 5 25. The cathode ray tube of claim 23, wherein the silicate layer contains an inorganic filler.
26. The cathode ray tube of claim 25, wherein the inorganic filler is selected from the group consisting of an aluminum oxide, a silicon carbide, a boron carbide, and a
10 titanium carbide.
27. The cathode ray tube of claim 22, wherein the main body portion has a deflection angle of at least 125 degrees.
- 15 28. The cathode ray tube of claim 22, wherein the at least one region has a tensile stress of at least 1350 pounds per square inch and the protective coating covers a majority of the at least one region.
29. A cathode ray tube having an envelope including a panel and a neck connected by a
20 funnel, the neck containing therein an in-line electron gun oriented for transpose scanning of electron beams emitted from the in-line electron gun, the funnel comprising:
a main body portion having a seal edge and a neck, the main body portion
having at least one region with a higher tensile stress than other regions of the main
25 body portion;

a first protective coating on an exterior surface of the main body portion, the first protective coating covering at least a portion of the at least one region, the first protective coating being of a composition and thickness to substantially reduce susceptibility of the at least one region to mechanical damage; and

5 a second protective coating on the exterior surface of the main body portion that covers at least a portion of the first protective coating, the second protective coating being of a composition and thickness to protect the funnel from moisture contact.